

REMARKS

Summary of the Office Action

Appropriate correction to the specification is required.

Claims 1-14 stand rejected under 35 U.S.C. §112, second paragraph, as being indefinite.

Claims 1-3, 8-14 stand rejected 35 U.S.C. §102(a) as being anticipated by U.S. Patent No. 6,058,013 to *Christopher et al.*

Claims 4 and 5 stand rejected 35 U.S.C. §103(a) as being unpatentable over *Christopher et al.*

Claims 6 and 7 stand rejected 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,506,755 to *Miyagi et al.*

Summary of the Response to the Office Action

Applicant has amended independent claim 1 and dependent claims 4-7 and 10-13, canceled claims 2, 3, 8, 9 and 14, and added new claims 15-22. Accordingly, claims 1, 4-7, 10-13, and 15-22 are currently pending.

The Rejection Under 35 U.S.C. §112, Second Paragraphs

Claims 1-14 stand rejected under 35 U.S.C. §112, second paragraph. Applicant has amended claim 1, 4-7, and 10-13, and canceled claims 2, 3, 8, 9 and 14 in accordance with the Examiner's comments. Applicant respectfully submits that the claims 1, 4-7 and 10-13, as amended, fully comply with the requirements of 35 U.S.C. § 112, second paragraph.

Accordingly, the Examiner's consideration and withdrawal of the rejection to the claims 1, 4-7 and 10-13 under 35 U.S.C. §112, second paragraph are respectfully requested.

The Rejections under 35 U.S.C. 102(a)

Claims 1-3 and 8-14 stand rejected under 35 U.S.C. §102(a) as being anticipated by *Christopher et al.* The rejection is respectfully traversed for at least the following reasons.

With respect to independent claim 1, as amended, Applicant respectfully submits that *Christopher et al.* does not teach or suggest the claimed combination, at least in which "said second heat radiating pattern has a larger area than that of said first radiating pattern."

The Examiner suggests that a circuit board 201 of *Christopher et al.* is a "printed wiring board" as claimed, a solder connection 203 of *Christopher et al.* is a "first heat radiating pattern" as claimed and a solder connection 121 of *Christopher et al.* is a "second heat radiating pattern" as claimed. The Examiner alleges that *Christopher et al.* discloses the solder connection 203 and solder connection 121 provided on the upper side of the circuit board 201 and the under side of the circuit board 201. However, *Christopher et al.* does not teach or suggest, as recited by the amended claim 1, that "said second heat radiating pattern has a larger area than that of said first radiating pattern." Instead, as shown in Figure 2 of *Christopher et al.*, the solder connection 203 (corresponding to the first radiating pattern) has the same area as the solder connection 121 (corresponding to the second radiating pattern). Thus, the second radiating pattern 121 of *Christopher et al.* does not have a larger area than that of the first radiating pattern 203 of *Christopher et al.* Therefore, *Christopher et al.* fails to teach or suggest at least "said second

heat radiating pattern has a larger area than that of said first radiating pattern.” as recited in amended independent claim 1.

Since Applicant canceled claims 2, 3, 8, 9 and 14 without prejudice and disclaimer, the rejection to claims 2, 3, 8, 9 and 14 is moot.

Applicant respectfully asserts that the rejection under 35 U.S.C. §§ 102(a) should be withdrawn because *Christopher et al.* does not teach or suggest each feature of independent claims 1. As pointed out in MPEP § 2131, “[t]o anticipate a claim, the reference must teach every element of the claim.” Thus, “[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. Verdegaal Bros. v. Union Oil Co. Of California, 2 USPQ 2d 1051, 1053 (Fed. Cir. 1987).” Furthermore, Applicant respectfully asserts that dependent claims 10-13, as amended, are allowable at least because of the dependence from the independent claim 1 and the reasons set forth above.

The Rejections under 35 U.S.C. 103(a)

Claims 4 and 5 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Christopher et al.* Claims 6 and 7 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Christopher et al.* in view of *Miyagi et al.* To the extent that this rejection is applied to claim 1 as amended, the rejection is respectfully traversed for the following reasons.

As discussed above, *Christopher et al.* fails to disclose the claimed combination, at least in which “said second heat radiating pattern has a larger area than that of said first radiating pattern.” Furthermore, *Miyagi et al.* does not overcome the deficiencies of *Christopher et al.*

Neither *Christopher et al.* nor *Miyagi et al.* teaches or suggests that “said second heat radiating pattern has a larger area than that of said first radiating pattern.” as recited in amended independent claim 1.

Therefore, Applicant respectfully asserts that the rejection of dependent claims 4-7 under 103(a) should be withdrawn because *Christopher et al.* and *Miyati et al.*, whether taken singly or combined, do not teach or suggest at least the above cited feature of independent claim 1, as amended. As pointed out in MPEP § 2143.03 instructs that “[t]o establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. In re Royka, 409 F.2d 981, 180 USPQ 580 (CCPA 1974).”

With no other rejection pending, Applicant respectfully submits that claims 1, 4-7 and 10-13 are allowable.

New Claims 15-22

Applicant has added new claims 15-22 to further define the invention. Applicant respectfully submits that new claims 15-22 are allowable over the prior art of record based on the reasons set forth above.

Conclusion

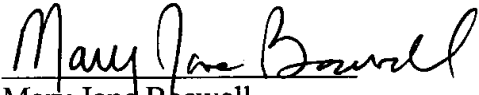
In view of the foregoing, Applicant respectfully requests reconsideration and the timely allowance of the pending claims. Should the Examiner feel that there are any issues outstanding after consideration of this response, the Examiner is invited to contact Applicant's undersigned representative to expedite prosecution.

Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attachment is captioned "Version with markings to show changes made."

Since the total number of the pending claims is over 20 and a multiple dependent claim is presented, please charge the amount of \$298 to our Deposit Account No. 50-0310.

If there are any other fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 50-0310. If a fee is required for an extension of time under 37 C.R.R. § 1.136 not accounted for above, such an extension is requested and the fee should also be charged to our Deposit Account.

Respectfully Submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE ABSTRACT:

The abstract has been amended as follows.

In the present invention, a printed wiring board with an electronic component **mounted** [~~face-mounted~~] on a circuit board in which the electronic component is provided with a heat radiating plate for conducting heat internally generated, is characterized in that the heat radiating means is **mounted** [~~face-mounted~~] at a position corresponding to the electronic component on a rear surface of the circuit board.

SPECIFICATION:

The specification has been replaced by the substitute specification.

IN THE CLAIMS:

New claims 15-22 have been added.

Claims 2, 3, 8, 9 and 14 have been canceled without prejudice and disclaimer.

Claims 1, 4-7 and 10-13 have been amended as follows.

1. (Amended) A printed wiring board with an electronic component **mounted** [~~face-mounted~~] on a circuit board in which the electronic component is provided with a heat radiating plate for conducting heat internally generated, comprising:

a first heat radiating pattern for conducting heat which is formed on a front surface of said electronic component, and connected to said heat radiating plate of the electronic component by soldering;

a second heat radiating pattern for conducting heat which is formed on a rear surface of said circuit board at a position being opposed to said electronic component, and

heat radiating means [~~face-mounted~~] mounted on said second heat radiating pattern by soldering at a position being opposed [~~corresponding~~] to the electronic component [~~on a rear surface of the circuit board.~~], wherein

said heat radiating plate and said first radiating pattern have a same area whereas said second heat radiating pattern has a larger area than that of said first radiating pattern or said heat radiating plate.

4. (Amended) **The** [A] printed wiring board according to claim 1[~~3~~], wherein said plated layer contains tin.

5. (Amended) **The** [A] printed wiring board according to claim 1[~~3~~], wherein said plated layer contains nickel.

6. (Amended) **The** [A] printed wiring board according to any one of claims 1, 4 and 5, wherein said heat radiating means is made of metal, and is provided, on a rear side thereof, with an attaching plate which is able to [~~can~~] be brought into contact[~~face-contact~~] with said

circuit board on a rear side thereof and on a front side thereof, with a plurality of fins for radiating heat.

7. (Amended) **The** [A] printed wiring board according to claim 6, wherein **said plurality of fins for radiating heat** [~~said heat radiating means is formed~~] **forms a corrugated cross-section being uniformly shaped** in such a way that a [~~corrugated member having a uniform section extruded from long lengths~~] **long-length** of a belt-shaped hoop material is **extruded and** cut at a prescribed **length** [~~lengths~~].

10. (Amended) **The** [A] printed wiring board according to claim **1** [9], wherein said first heat radiating pattern and said heat radiating **plate** [~~pattern~~] are connected to each other via through-holes which [~~passing~~] **pass** through said circuit board.

11. (Amended) **The** [A] printed wiring board according to claim **1** [8], wherein said first heat radiating pattern is a common pattern of wiring patterns which constitute circuits formed on said circuit board.

12. (Amended) **The** [A] printed wiring board according to claim **1** [9], wherein said **second** [~~first~~] heat radiating pattern is a common pattern **of** [~~in~~] wiring patterns which constitute circuits formed on said circuit board.

13. (Amended) **The** ~~[A]~~ printed wiring board according to claim 6, wherein **said fins** **of** said heat radiating means ~~[is]~~ **are designed to** ~~[attached to said circuit board in such a manner that said fins]~~ stand **with respect to** ~~[when]~~ the circuit board ~~[is used in its standing state]~~.